

유 승 아 (Ph. D. Seung-Ah Yoo)

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현재 소속: 가톨릭 의과대학교 의생명과학교실 조교수

이메일: youcap78@hanmail.net / youcap78@catholic.ac.kr

전화 번호: 02-3147-8410

1. 주요학력 및 경력

- 1996.03-2000.02 순천향대학교 생명과학부 생물학과 졸업
학사 논문: 수생식물 이형엽의 비교형태학적 연구
- 2000.05-2000.12 성균관대학교 의과대학 약리학실험실 위축 연구원
- 2001.03-2003.02 성균관대학교 생명과학과 대학원 졸업
지도 교수: 동물생리학실험실 박영민
석사 논문: Mouse insulinoma cell 에서 Insulin 分泌에 대한 Annexin II 의 作用
- 2003.06-2007.02 가톨릭대학교 의과학연구원 골관절질환연구소 (임상면역) 연구원
- 2007.09-2010.08 가톨릭대학교 면역미생물학 대학원 졸업
지도 교수: 류마티스 내과 김완욱
박사 논문: Role of Placenta Growth Factor and Its Receptor Flt-1 in Rheumatoid Inflammation
- 2010.09-1012.08 가톨릭대학교 면역생물학 연구소 (골관절질환연구소) Postdoctoral Fellow
학문후속세대양성사업 박사 후 국내연수 2년형
- 2012.09-2013.08 미국 예일대학교 Department of Internal Medicine Postdoctoral Fellow
학문후속세대양성사업 박사 후 국외연수

- 2013.09-2018.03 가톨릭대학교 면역질환융합연구소(CRCID) 연구교수 겸 창의 연구단 연구교수
대통령 Post-Doc 펠로우십 연구책임자 (한국 연구재단, 2014.11-2019.10, 5년간)
 과제명: 소포체 스트레스가 T 림프구의 분화와 활성화에 미치는 영향 연구
- 2018.03-2020.02 가톨릭 의과대학교 연구조교수 (전임대우)
2019 중견연구자지원사업선정 (한국 연구재단, 2019.1-2024, 5년간 10억)
 과제명: 류마티스관절염의 전이 기작 규명
- 2020.03- 현재 **가톨릭대학교 의생명과학교실 조교수**
중견연구자지원사업 (책임)
 창의연구지원사업 (참여)

2. 수상 경력

- (1) 2015 로레알-유네스코 여성생명과학상 수상
- (2) 2012, 2014 가톨릭대학교 면역질환융합연구소 우수 논문상 수상
- (3) 2009 여성생명과학기술포럼 새별상 수상

3. 주요연구분야

- Immunology, Cell biology, Angiogenesis, Autoimmune disease

4. 대표적 연구성과 (제 1 저자 및 교신저자 논문, 최근 특허 실적)

- (1) Jeong GH, Nam MK, Hur W, Heo S, Lee S, Choi E, Park JH, Park Y, Kim WU, Rhim H and **Yoo SA**. Role of high-temperature requirement serine protease A 2 in rheumatoid inflammation. **Arthritis Research & Therapy**. 7;25(1):96. **2023**. (Co-correspondence) **IF;5.7**
- (2) Lee S, Choi E, Chae S, Koh JH, Choi Y, Kim JG, **Yoo SA**, Hwang D, Kim WU. Identification of MYH9 as a key regulator for synovocyte migration and invasion through secretome profiling. **Ann Rheum Dis**. 82(8):1035-1048. **2023**. (Co-correspondence) **IF;27.4**
- (3) Kim N, Kang H, Jo A, Yoo SA, Lee HO. Perspectives on single-nucleus RNA sequencing in different cell types and tissues. *J Pathol Transl Med* 57(1):52-55. 2023. (Co-correspondence)
- (4) Nam MK, Seong Y, Jeong GH, **Yoo SA**, Rhim H. HtrA2 regulates α -Synuclein-mediated mitochondrial reactive oxygen species production in the mitochondria of microglia. **Biochem Biophys Res Commun**.1;638:84-93. **2023**. (Co-correspondence)

- (5) Nam MK, Shin HA, Yun H, **Yoo SA**, Rhim H. Delayed hair cycle in mnd2 mutant mice lacking HtrA2 serine protease activity. *Biochem Biophys Res Commun.* 22;641:102-109. **2023**. (Co-correspondence)
- (6) Kong JS, Jeong GH, **Yoo SA**. The use of animal models in rheumatoid arthritis research. *J Yeungnam Med Sci.* 40(1):23-29. **2022**. (Correspondence)
- (7) Park YJ, **Yoo SA**, Kim M, Kim WU. The role of calcium-calcineurin-NFAT signaling pathway in health and autoimmune diseases. *Front Immunol.* 10;11;195. **2020**. (Co-first author) **IF;7.3**
- (8) **Yoo SA**, Kim M, Kang MC, Kong JS, Kim KM, Lee S, Hong BK, Jeong GH, Lee J, Shin MG, Kim YG, Apicella I, Cicatiello V, De Falco S, Yoon CH, Cho CS, Ryoo ZY, Lee SH, Kim WU. Placental growth factor regulates the generation of T_H17 cells to link angiogenesis with autoimmunity. *Nature Immunology* 20(10):1348-1359. **2019**. (Co-first author) **IF;30.5**
- (9) Lee S, Kong JS, You S, Kwon HM, **Yoo SA**, Cho CS, Kim WU. Transcription Factor NFAT5 Promotes Migration and Invasion of Rheumatoid Synoviocytes via Coagulation Factor III and CCL2. *J Immunol.* 15;201(2):359-370. **2018**. (Co-correspondence)
- (10) **Yoo SA**, Leng L, Kim BJ, Du X, Tilstam PV, Kim KH, Kong JS, Yoon HJ, Liu A, Wang T, Song Y, Sauler M, Bernhagen J, Ritchlin CT, Lee P, Cho CS, Kim WU, Bucala R. - MIF allele-dependent regulation of the MIF coreceptor CD44 and role in rheumatoid arthritis. *Proc Natl Acad Sci U S A.* 6;113(49):E7917-E7926. **2016**. (Co-first author) **IF;11**
- (11) Kim D, **Yoo SA**, Kim WU. Gut microbiota in autoimmunity: potential for clinical applications. *Arch Pharm Res.* 39(11):1565-1576. **2016**. (Co-first author)
- (12) **Yoo SA**, Park JH, Hwang SH, Oh SM, Lee S, Cicatiello V, Rho S, De Falco S, Hwang D, Cho CS, Kim WU. - Placental growth factor-1 and -2 induce hyperplasia and invasiveness of primary rheumatoid synoviocytes. *J Immunol.* 15;194(6):2513-21. **2015**.
- (13) You S, **Yoo SA**, Choi S, Kim JY, Park SJ, Ji JD, Kim TH, Kim KJ, Cho CS, Hwang D, Kim WU. - Identification of key regulators for the migration and invasion of rheumatoid synoviocytes through a systems approach. *Proc Natl Acad Sci U S A.* 7;111(1):550-5. **2014**. (Co-first author) **IF;11**
- (14) **Yoo SA**, You S, Yoon HJ, Kim DH, Kim HS, Lee K, Ahn JH, Hwang D, Lee AS, Kim KJ, Park YJ, Cho CS, Kim WU. - A novel pathogenic role of the ER chaperone GRP78/BiP in rheumatoid arthritis. *J Exp Med.* 9;209(4):871-86. **2012**. **IF;17.6**
- (15) Kong JS, **Yoo SA**, Kang JH, Ko W, Jeon S, Chae CB, Cho CS, Kim WU. - Suppression of neovascularization and experimental arthritis by D-form of anti-flt-1 peptide conjugated with mini-PEG^(TM). *Angiogenesis.* 14(4):431-42. **2011**. (Co-first author) **IF;9.8**
- (16) Kong JS, **Yoo SA**, Kim HS, Kim HA, Yea K, Ryu SH, Chung YJ, Cho CS, Kim WU. - Inhibition of synovial hyperplasia, rheumatoid T cell activation, and experimental arthritis in mice by sulforaphane, a naturally occurring isothiocyanate. *Arthritis Rheum.* 62(1):159-70. **2010**. (Co-first author) **IF;13.3**
- (17) **Yoo SA**, Yoon HJ, Kim HS, Chae CB, De Falco S, Cho CS, Kim WU. - Role of placenta growth factor and its receptor flt-1 in rheumatoid inflammation: a link between angiogenesis and inflammation. *Arthritis Rheum.* 60(2):345-54. **2009**. **IF;13.3**

(18) **Yoo SA**, Kwok SK, Kim WU. - Proinflammatory role of vascular endothelial growth factor in the pathogenesis of rheumatoid arthritis: prospects for therapeutic intervention. *Mediators Inflamm.* 129873. **2008.**

(19) **Yoo SA**, Park BH, Yoon HJ, Lee JY, Song JH, Kim HA, Cho CS, Kim WU. - Calcineurin modulates the catabolic and anabolic activity of chondrocytes and participates in the progression of experimental osteoarthritis. *Arthritis Rheum.* 56(7):2299-311. **2007. IF;13.3**

(20) **Yoo SA**, Park BH, Park GS, Koh HS, Lee MS, Ryu SH, Miyazawa K, Park SH, Cho CS, Kim WU. - Calcineurin is expressed and plays a critical role in inflammatory arthritis. *J Immunol.* 15;177(4):2681-90. **2006.**

(21) **Yoo SA**, Bae DG, Ryoo JW, Kim HR, Park GS, Cho CS, Chae CB, Kim WU. - Arginine-rich anti-vascular endothelial growth factor (anti-VEGF) hexapeptide inhibits collagen-induced arthritis and VEGF-stimulated productions of TNF-alpha and IL-6 by human monocytes. *J Immunol.* 1;174(9):5846-55. **2005.**

(22) **특허 명칭:** 미니-PEG 가 접합된 항-flt-1 펩타이드를 유효성분으로 함유하는 혈관신생 억제용 조성물
등록 번호: 10-1377797, **등록 일자:** 2014-03-18,

(23) **특허 명칭:** 류마티스 관절염 관련 바이오마커
등록 번호: 10-2016-0097185, **등록 일자:** 2016-7-29

(24) **특허 명칭:** 류마티스 관절염 진단용 바이오마커
등록 번호: 10-2017-0095284, **등록 일자:** 2019-5-9

(25) **특허 명칭:** 8-쇼가올을 포함하는 약학적 조성물
출원 번호: 10-2022-0019190, **출원 일자:** 2022-2-14

(26) **특허 명칭:** 류마티스 관절염의 질병활성도 평가용 바이오마커 및 이의 이용
등록 번호: 10-2481470, **등록 일자:** 2022-12-21

참여저자 논문

(1) S Jo, S Samarpita, JS Lee, YJ Lee, JE Son, M Jeong, JH Kim, S Hong, SA Yoo, WU Kim, M Rasool, S Byun. 8-Shogaol inhibits rheumatoid arthritis through targeting TAK1. *Pharmacol Res.* Apr;178:106176. doi: 10.1016/j.phrs.2022.106176. **2022**

(2) J Lee, J Lee, S Lee, **SA Yoo**, KM Kim, WU Kim, CS Cho, CH Yoon. Genetic deficiency of nuclear factor of activated T cells 5 attenuates the development of osteoarthritis in mice. *Joint Bone Spine* Jan;89(1):105273. doi: 10.1016/j.jbspin. **2021**

(3) JH Koh, S Lee, HS Kim, K Lee, CS Lee, **SA Yoo**, N Lee, WU Kim, Development of Monitoring System for Assessing Rheumatoid Arthritis within 5 Minutes Using a Drop of Bio-Fluids. *J Clin Med.* Oct 29;9(11). doi: 10.3390/jcm9113499. **2020**

- (4) Kong JS, Park JH, **Yoo SA**, Kim KM, Bae YJ, Park YJ, Cho CS, Hwang D, Kim WU. Dynamic transcriptome analysis unveils key proresolving factors of chronic inflammatory arthritis. *J Clin Invest*. Jun 22;126:866. Doi 10.1172/JCI126866. **2020**
- (5) Kim JW, Kong JS, Lee S, **Yoo SA**, Koh JH, Jin J, Kim WU. Angiogenic Cytokines can reflect the synovitis severity and treatment response to biologics in rheumatoid arthritis. *Exp Mol Med*. 52(5):843-853. **2020**
- (6) Koh JH, Park YJ, Lee S, Hong YS, Hong KS, Yoo SA, Cho CS, Kim WU Distinct Urinary Metabolic Profile in Rheumatoid Arthritis Patients: A Possible Link between Diet and Arthritis Phenotype. *Journal of Rheumatic Diseases*. **2019**
- (7) Hong BK, You S, **Yoo SA**, Park D, Hwang D, Cho CS, Kim WU. MicroRNA-143 and -145 modulate the phenotype of synovial fibroblasts in rheumatoid arthritis. *Exp Mol Med*. 4;49(8):e363. **2017**
- (8) Han EJ, Kim HY, Lee N, Kim NH, **Yoo SA**, Kwon HM, Jue DM, Park YJ, Cho CS, De TQ, Jeong DY, Lim HJ, Park WK, Lee GH, Cho H, Kim WU. Suppression of NFAT5-mediated Inflammation and Chronic Arthritis by Novel κ B-binding Inhibitors. *EBio Medicine*. 18:261-273. **2017**
- (9) Park YJ, **Yoo SA**, Kim GR, Cho CS, Kim WU. Urinary interleukin-6 as a predictor of radiographic progression in rheumatoid arthritis: A 3-year evaluation. *Sci Rep*.12;6:35242. **2016**
- (10) Park Y, **Yoo SA**, Kim WU, Cho CS, Woo JM, Yoon CH. Anti-inflammatory effects of essential oils extracted from *Chamaecyparis obtusa* on murine models of inflammation and RAW 264.7 cells. *Mol Med Rep Apr*;13(4):3335-41. **2016**
- (11) Park YJ, **Yoo SA**, Hwang D, Cho CS, Kim WU. Identification of novel urinary biomarkers for assessing disease activity and prognosis of rheumatoid arthritis. *Exp Mol Med*. 26;48:e211. **2016**
- (12) Han EJ, **Yoo SA**, Kim GM, Hwang D, Cho CS, You S, Kim WU. GREM1 Is a Key Regulator of Synoviocyte Hyperplasia and Invasiveness. *J Rheumatol*. 43(3):474-85. **2016**
- (13) Park Y, Jung SM, **Yoo SA**, Kim WU, Cho CS, Park BJ, Woo JM, Yoon CH. Antinociceptive and anti-inflammatory effects of essential oil extracted from *Chamaecyparis obtusa* in mice. *Int Immunopharmacol* 29(2):320-5. **2015**
- (14) Hwang SH, Jung SH, Lee S, Choi S, **Yoo SA**, Park JH, Hwang D, Shim SC, Sabbagh L, Kim KJ, Park SH, Cho CS, Kim BS, Leng L, Montgomery RR, Bucala R, Chung YJ, Kim WU. Leukocyte-specific protein 1 regulates T-cell migration in rheumatoid arthritis. *Proc Natl Acad Sci U S A*. 24;112(47): E6535-43. **2015**
- (15) Shin MS, You S, Kang Y, Lee N, **Yoo SA**, Park K, Kang KS, Kim SH, Mohanty S, Shaw AC, Montgomery RR, Hwang D, Kang DNA Methylation Regulates the Differential Expression of CX3CR1 on Human IL-7R^{low} and IL-7R^{high} Effector Memory CD8⁺ T Cells with Distinct Migratory Capacities to the Fractalkine. *J Immunol*. 15;195(6):2861-9. **2015**
- (16) Lee MS, Ghim J, Kim SJ, Yun YS, **Yoo SA**, Suh PG, Kim WU, Ryu SH. Functional interaction between CTGF and FPRL1 regulates VEGF-A-induced angiogenesis. *Cell Signal*. 27(7):1439-48. **2015**
- (17) Kang MJ, Park YJ, You S, **Yoo SA**, Choi S, Kim DH, Cho CS, Yi EC, Hwang D, Kim WU. Urinary proteome profile predictive of disease activity in rheumatoid arthritis. *J Proteome Res* 7;13(11):5206-17. **2014**
- (18) Lee N, Shin MS, Kang KS, **Yoo SA**, Mohanty S, Montgomery RR, Shaw AC, Kang I. Human monocytes have increased IFN- γ -mediated IL-15 production with age alongside altered IFN- γ receptor

signaling. *Clin Immunol.* 152(1-2):101-10. **2014**

(19) Park YJ, **Yoo SA**, Kim WU. Role of endoplasmic reticulum stress in rheumatoid arthritis pathogenesis. *J Korean Med Sci.* 29(1):2-11. **2014**

(20) Park YJ, **Yoo SA**, Choi S, Yoo HS, Yoon HS, Cho CS, Yoo KD, Kim WU. Association of polymorphisms modulating low-density lipoprotein cholesterol with susceptibility, severity, and progression of rheumatoid arthritis. *J Rheumatol.* 40(6):798-808. **2013**

(21) Park YJ, **Yoo SA**, Lee JH, Chung YJ, Cho CS, Kim WU. The APOM polymorphism as a novel risk factor for dyslipidaemia in rheumatoid arthritis: a possible shared link between disease susceptibility and dyslipidaemia. *Clin Exp Rheumatol.* 31(2):180-8. **2013**

(22) Lee YS, Lee KA, Yoon HB, **Yoo SA**, Park YW, Chung Y, Kim WU, Kang CY. The Wnt inhibitor secreted Frizzled-Related Protein 1 (sFRP1) promotes human Th17 differentiation. *Eur J Immunol.* 42(10):2564-73. **2012**

(23) Yoon HJ, You S, **Yoo SA**, Kim NH, Kwon HM, Yoon CH, Cho CS, Hwang D, Kim WU. NF-AT5 is a critical regulator of inflammatory arthritis. *Arthritis Rheum.* 63(7):1843-52. **2011**

(24) Kim WU, Min SY, Hwang SH, **Yoo SA**, Kim KJ, Cho CS. Effect of oestrogen on T cell apoptosis in patients with systemic lupus erythematosus. *Clin Exp Immunol.* 161(3):453-8. **2010**

(25) Kong JS, **Yoo SA**, Kim JW, Yang SP, Chae CB, Tarallo V, De Falco S, Ryu SH, Cho CS, Kim WU. Anti-neuropilin-1 peptide inhibition of synoviocyte survival, angiogenesis, and experimental arthritis. *Arthritis Rheum.* 62(1):179-90. **2010**

(26) Kwok SK, Shin YJ, Kim HJ, Kim HS, Kim JY, **Yoo SA**, Choi JJ, Kim WU, Cho CS. Circulating osteoprotegerin levels are elevated and correlated with antiphospholipid antibodies in patients with systemic lupus erythematosus. *Lupus.* 18(2):133-8. **2009**

(27) Choi JJ, **Yoo SA**, Park SJ, Kang YJ, Kim WU, Oh IH, Cho CS. Mesenchymal stem cells overexpressing interleukin-10 attenuate collagen-induced arthritis in mice. *Clin Exp Immunol.* 153(2):269-76. **2008**

(28) Kim JY, Kwok SK, Hur KH, Kim HJ, Kim NS, **Yoo SA**, Kim WU, Cho CS. Up-regulated macrophage migration inhibitory factor protects apoptosis of dermal fibroblasts in patients with systemic sclerosis. *Clin Exp Immunol.* 152(2):328-35. **2008**

(29) Yu DH, Kim MO, Kim SH, Shin MJ, Kim BS, Kim HJ, Lee SR, Lee SG, **Yoo SA**, Kim WU, Hyun BH, Park YS, Kim TY, Ryoo ZY. The therapeutic effect of extracellular superoxide dismutase (EC-SOD) mouse embryonic fibroblast (MEF) on collagen-induced arthritis (CIA) mice. *Cell Transplant.* 17(12):1371-80. **2008**

(30) Kim WU, Kwok SK, Hong KH, **Yoo SA**, Kong JS, Choe J, Cho CS. Soluble Fas ligand inhibits angiogenesis in rheumatoid arthritis. *Arthritis Res Ther.* 9(2):R42. **2007**

(31) Hong KH, Cho ML, Min SY, Shin YJ, **Yoo SA**, Choi JJ, Kim WU, Song SW, Cho CS. Effect of interleukin-4 on vascular endothelial growth factor production in rheumatoid synovial fibroblasts. *Clin Exp Immunol.* 147(3):573-9. **2007**

(32) Jang J, Lim DS, Choi YE, Jeong Y, **Yoo SA**, Kim WU, Bae YS. MLN51 and GM-CSF involvement in the proliferation of fibroblast-like synoviocytes in the pathogenesis of rheumatoid arthritis. *Arthritis Res Ther.* 8(6):R170. **2006**

- (33) Hong KH, **Yoo SA**, Kang SS, Choi JJ, Kim WU, Cho CS. Hypoxia induces expression of connective tissue growth factor in scleroderma skin fibroblasts. *Clin Exp Immunol.* 146(2):362-70. **2006**
- (34) Kim WU, Kang SS, Yoo SA, Hong KH, Bae DG, Lee MS, Hong SW, Chae CB, Cho CS. Interaction of vascular endothelial growth factor 165 with neuropilin-1 protects rheumatoid synoviocytes from apoptotic death by regulating Bcl-2 expression and Bax translocation. *J Immunol.* 15;177(8):5727-35. 2006
- (35) Lee MS, **Yoo SA**, Cho CS, Suh PG, Kim WU, Ryu SH. Serum amyloid A binding to formyl peptide receptor-like 1 induces synovial hyperplasia and angiogenesis. *J Immunol.* 15;177(8):5585-94. **2006**
- (36) Jung YO, Do JH, Kang HJ, **Yoo SA**, Yoon CH, Kim HA, Cho CS, Kim WU. Correlation of sonographic severity with biochemical markers of synovium and cartilage in knee osteoarthritis patients. *Clin Exp Rheumatol.* 24(3):253-9. **2006**
- (37) Kim WU, **Yoo SA**, Min SY, Park SH, Koh HS, Song SW, Cho CS. Hydroxychloroquine potentiates Fas-mediated apoptosis of rheumatoid synoviocytes. *Clin Exp Immunol.* 144(3):503-11. **2006**
- (38) Hong SH, Won JH, **Yoo SA**, Auh CK, Park YM. Effect of annexin I on insulin secretion through surface binding sites in rat pancreatic islets. *FEBS Lett.* 4;532(1-2):17-20. **2002**